Louisiana Department of Environmental Quality (LDEQ)
Office of Environmental Services

STATEMENT OF BASIS

Units 294 – Low Sulfur Gasoline Unit
Alliance Refinery
ConocoPhillips Company
Belle Chasse, Plaquemines Parish, Louisiana
Agency Interest Number: 2418
Activity Number: PER20080006
Draft Permit No. 2840-V2

I. APPLICANT:

Company:
ConocoPhillips Company
P.O. Box 176, Belle Chasse, LA 70037

Facility:
Alliance Refinery
15551 Hwy 23, Belle Chasse, Plaquemines Parish, Louisiana
Approximate UTM coordinates are 211.51 kilometers East and 3,286.84 kilometers North, Zone 16

II. FACILITY AND CURRENT PERMIT STATUS:

ConocoPhillips Company owns and operates the Alliance Refinery, a petroleum refinery located in Belle Chasse, Louisiana. Gulf Oil Company built the refinery in 1970. BP Oil Company owned Alliance Refinery from 1985 until Tosco Corporation (Tosco) purchased it in September 2000. Tosco later became a wholly owned subsidiary of Phillips Petroleum Company on September 17, 2001. On August 30, 2002, Phillips Petroleum Company, including its subsidiary Tosco Corporation, completed a merger with Conoco Inc. to form ConocoPhillips Company. On January 1, 2003, the owner and operator of the Alliance Refinery formally changed from Tosco to ConocoPhillips Company.

Alliance Refinery produces a wide range of petroleum products from crude oil, such as motor gasoline, jet fuel, diesel fuel, LPG, carbon black feedstock, propane, and coke. It also produces by-product elemental sulfur and petrochemicals such as benzene, toluene, and xylene. The plant is covered by Standard Industrial Classification (SIC) 2911.

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Unit 294, Low Sulfur Gasoline Unit, is part of the Clean Fuels Project that produces low sulfur gasoline with sulfur content less than 30 parts per million (ppm). The project was needed to come in compliance with the US EPA Tier 2 requirements. The rule mandated a reduction in sulfur content in gasoline.

Full range Fluid Catalytic Cracking Unit gasoline is treated with additional hydrotreating to reduce the sulfur content. The Unit equipment consists of reactors, a heater, a compressor, an amine contactor, and a gasoline stabilizer.

Generally, for the hydrotreating, liquid feed and process makeup hydrogen are heated and contacted with one or more fixed bed catalytic reactors. Reactor effluent is cooled and separated. The liquid is stripped to remove light components and hydrogen sulfide. Hydrogen-rich gas is amine treated to remove hydrogen sulfide and is recycled back to the reactors. The liquid is then fractionated into the desired products.

Several Part 70 and PSD permits addressing portions of the facility have already been issued. These include:

Permit Number	Units or Sources	Unit Name	Date Issued
PSD-LA-75(M-2)	Unit 301	Boilers	10/13/87
PSD-LA-624	Source 301-B-3	Supplemental Boiler	09/16/98
2593-V1	Unit 293	Gulfining Unit	04/11/07
2113-V1	Unit 292	Diesel Hydrotreater Unit	09/10/07
2513-V4	Unit 412	Offsites	12/07/05
2776-V1	Unit 7591	Merox Treater Unit	01/03/08
2511-V2	Unit 891	Delayed Coking Unit	11/16/05
2840-V1	Unit 294	Low Sulfur Gasoline Unit	08/03/07
PSD-LA-696	Unit 294	Low Sulfur Gasoline Unit	10/03/03
2512-V1	Unit 491 & Unit 6191	HF Alkylation & Light Ends Recovery Unit	10/08/03
2778-V0	Unit 303	Utilities	08/16/04
2774-V2	Unit 591/592	Sulfur Recovery Unit	09/04/07
1810-V2 AA	Unit 1291/301	Fluidized Catalytic Cracking Unit/CO Boilers	01/30/07
1870-V0	Unit 308W	Wastewater Treatment Unit	08/23/05
2313-V1	Unit 406	Marine Loading and Transfer Operations	02/28/08
2180-V0	Unit 191/7991	Crude and Saturate Gas Unit	04/25/06
2779-V1	Unit 308F	Flares Unit	09/04/07
2775-V0	Units 291/1391/1791/1792	Naphfining, Catalytic Reforming, Aromatic Extraction, and Thermal Hydrodealklylation Units	05/31/06

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III. PROPOSED PERMIT / PROJECT INFORMATION:

Permit Application Submittal Information

ConocoPhillips Company submitted an application and Emission Inventory Questionnaire (EIQ) dated March 28, 2008, requesting a Part 70 permit renewal.

Project description

ConocoPhillips is not proposing any physical modifications with this renewal application.

ConocoPhillips is proposing the following changes:

1. Reconcile fugitive emissions with updated emission factors and as-built component counts. As a result of this reconciliation, the PSD Permit, Permit No. PSD-LA-696(M-1), is being modified to reconcile the PSD permit limit for Unit Fugitives, Emission Point No. 294-FF.

2. Increase the maximum firing rating for the Low Sulfur Gasoline Feed Heater No. 1, Emission Point No. 294-H-1, from 120 MM BTU/hr to 138.12 MM BTU/hr. No modifications have been made to the heater. The change was necessary to more accurately reflect the maximum firing rate of the heater.

3. Update combustion emission speciation based on emission factors from API publication 348 for the Low Sulfur Gasoline Feed Heater No. 1, Emission Point No. 294-H-1.

4. Remove 40 CFR 63 Subpart DDDDD regulations from the Low Sulfur Gasoline Feed Heater No. 1, Emission Point No. 294-H-1. This subpart was vacated by the courts.

5. Renew the Part 70 Operating Permit.

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Permitted Air Emissions

Estimated emissions in tons per year are as follows:

Pollutant	Before	After	Change
PM_{10}	3.76	3.76	-
SO_2	13.56	13.56	-
NO_X	20.17	20.17	-
CO	41.52	41.52	-
VOC *	34.47	60.61	+26.14[1]
Lead Compounds	-	<0.001	-
Other**	0.17	0.212	+0.042

[1]There are no new projects with this modification so it is not subject to Reasonable Possibility Analysis.

*VOC LAC 33:III Chapter 51 Toxic Air Pollutants (TAPs) in TPY:

Pollutant	Before	After	Change
1,3-Butadiene	<0.01	<0.010	-
2,2,4-Trimethypentane	0.94	1.710	+ 0.770
Acetaldehyde	-	0.006	+ 0.006
Acrolein	-	0.009	+ 0.009
Benzene	0.56	1.050	+ 0.490
Cumene	0.07	0.130	+ 0.060
Ethylbenzene	0.48	0.878	+ 0.398
Formaldehyde	-	0.026	+ 0.026
n-Hexane	0.71	1.290	+ 0.580
Naphthalene	0.13	0.240	+ 0.110
PAH	-	<0.001	-
Phenol	-	<0.001	-
Toluene	2.48	4.520	+ 2.040

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*VOC LAC 33:III Chapter 51 Toxic Air Pollutants (TAPs) in TPY:

Pollutant	Before	After	Change
Xylenes (mixed isomers)	2.10	3.830	+ 1.730
Total TAPs	7.47	13.689	+ 6.219
Other VOCs	27.00	46.921	+19.921

**NON-VOC LAC 33:III Chapter 51 Toxic Air Pollutants (TAPs):

Pollutant	Before	After	Change
Antimony	-	<0.001	-
Arsenic	-	<0.001	-
Barium	-	0.003	+0.003
Beryllium	-	<0.001	-
Cadmium	-	0.001	+0.001
Chromium VI	-	0.003	+0.003
Copper	-	0.002	+0.002
Manganese	-	0.002	+0.002
Mercury	-	<0.001	-
Nickel	-	0.004	+0.004
Selenium	-	<0.001	-
Sulfuric Acid	0.17	0.170	-
Zinc	-	0.027	+0.027
Total	0.17	0.212	+0.042

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Prevention of Significant Deterioration Applicability

Since there are no physical modifications with this application, a Prevention of Significant Deterioration analysis is not required.

This application was reviewed for compliance with the Part 70 operating permit program. It was also reviewed for compliance with Louisiana Air Quality Regulations, National Emission Standards for Hazardous Air Pollutants (NESHAP), and New Source Performance Standards (NSPS). Prevention of Significant Deterioration (PSD) does not apply.

MACT requirements

Compliance with the Louisiana Fugitive Emission Consolidation Program, with LA Refinery MACT being the most stringent program for Unit 294 - Low Sulfur Gasoline Unit, is determined as MACT for fugitive emissions.

Air Modeling Analysis

Dispersion Model(s) Used: ISCST3

Pollutant	Time Period	Calculated Maximum Ground Level Concentration	Louisiana Air Quality Standard (NAAQS)
NO_X	Annual	20.56 $\mu g/m^3$	(100 $\mu g/m^3$)
SO_2	3-hour	458.30 $\mu g/m^3$	(1300 $\mu g/m^3$)
	24-hour	264.25 $\mu g/m^3$	(365 $\mu g/m^3$)
	Annual	25.31 $\mu g/m^3$	(80 $\mu g/m^3$)

The dispersion model was run for the Clean Fuels project. The screening model results for SO_2 were added to the Clean Fuels results since the 2005 flare study resulted in a significant increase of SO_2 emission estimates.

Impact on air quality from Unit 294 will be below the National Ambient Air Quality Standards (NAAQS) and the Louisiana Ambient Air Standards (AAS) beyond industrial property.

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General Condition XVII Activities

The facility will comply with the applicable requirements of General Condition XVII of the Louisiana Air Emission Permit General Conditions in the Title V Permit. For a list of approved General Condition XVII Activities, refer to Section VIII of the draft Part 70 permit. These releases are small and will have an insignificant impact on air quality.

Insignificant Activities

All Insignificant Activities are authorized under LAC 33:III.501.B.5. For a list of approved Insignificant Activities, refer to Section IX of the draft Part 70 permit.

IV. Permit Shields

A permit shield was not requested.

V. Periodic Monitoring

Fugitive emissions must be monitored according to the provisions of Louisiana Refinery MACT.

VI. Applicability and Exemptions of Selected Subject Items

Regulatory applicability, standards, monitoring, reporting and recordkeeping requirements are provided in the Facility Specific Requirements Section of the draft permit. The table below summarizes highlights of the regulatory applicability for each emission point.

Source ID No.:	Requirement	Applicability
Facility – Unit 294	40 CFR 61.340 Subpart FF– National Emission Standard for Benzene Waste Operations.	Refinery has > 10 Mg/yr benzene from waste and must meet control, reporting, and recordkeeping requirements. (See Title V Permit, Unit 308W, Wastewater Treatment Unit.)

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Source ID No.:	Requirement	Applicability
294-H-1 Low Sulfur Gasoline Feed Heater No. 1	LAC 33:III.1101.B – Control of Emissions of Smoke	Emissions of smoke shall be controlled so shade is not darker than 20 % opacity. Particulate matter source shall be controlled so that the shade or appearance of emissions is not denser than 20 % average opacity, except for >20% for not more than one 6 min. period in any 60 consecutive min.
	LAC 33:III.1313.C – Emission Standards for Particulate Matter	Limit the quantity of particilate matter emitted from fuel burning equipment to <0.6 lb/MMBTU of heat input.
	LAC 33:III.1503.C – Emission Standard for Sulfur Dioxide	EXEMPT. Unit emits <250 tpy SO_2.
	40 CFR 60 Subpart J – Standards of Performance for Petroleum Refineries	Hydrogen Sulfide concentration in fuel gas must be less than 0.10 gr/dscf.
294-FF 294 Unit Fugitives	LAC 33:III.2111 Control of Emissions of Organic Compounds – Pumps and Compressors	All rotary pumps and compressors handling VOC with TVP >= 1.5 psia to be equipped with mechanical seals or equivalent approved equipment.
	LAC 33:III.5109.A Comprehensive Toxic Air Pollutant Emission Control Program	Control emissions of toxic air pollutants to a degree that constitutes Maximum Achievable Control Technology (MACT) as approved by DEQ. Compliance with the Louisiana Fugitive Emission Consolidation Program, with LA Refinery MACT, being the most stringent program, is determined as MACT.

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VII. Streamlined Requirements

Unit or Plant Site	Programs Being Streamlined	Stream Applicability	Overall Most Stringent Program
Unit 294 – Low Sulfur Gasoline	LAC 33:III.Chapter 51, LA MACT for Refineries	≥ 5% VOTAP (Class I + II)	LA MACT for Refineries
	40 CFR 63, Subpart CC NESHAP – Petroleum Refineries	≥ 5% organic HAP	
	40 CFR 60 Subpart GGG NSPS - VOC Equipment Leaks in Petroleum Refineries	≥ 10% VOC	
	LAC 33:III.2121, Louisiana Fugitive Emission Control	≥ 10% VOC	

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VIII. Glossary

Best Available Control Technologies (BACT) - An emissions limitation (including a visible emission standard) based on the maximum degree of reduction for each pollutant subject to regulation under this part which would be emitted from any proposed major stationary source or major modification which the administrative authority, on a case-by-case basis, taking into account energy, environmental, and economic impacts and other costs, determines is achievable for such source or modification through application of production processes or available methods, systems, and techniques, including fuel cleaning or treatment or innovative fuel combustion techniques for control of such pollutant.

CAM - Compliance Assurance Monitoring rule – A federal air regulation under 40 CFR Part 64

Carbon Black - A black colloidal substance consisting wholly or principally of amorphous carbon and used to make pigments and ink.

Carbon Monoxide (CO) – (Carbon monoxide) a colorless, odorless gas produced by incomplete combustion of any carbonaceous (gasoline, natural gas, coal, oil, etc.) material.

Cooling Tower – A cooling system used in industry to cool hot water (by partial evaporation) before reusing it as a coolant.

Continuous Emission Monitoring System (CEMS) – The total combined equipment and systems required to continuously determine air contaminants and diluent gas concentrations and/or mass emission rate of a source effluent.

Cyclone – A control device that uses centrifugal force to separate particulate matter from the carrier gas stream.

Duct Burner – A device that combusts fuel and that is placed in the exhaust duct from another source (such as a stationary gas turbine, internal combustion engine, kiln, etc.) to allow the firing of additional fuel to heat the exhaust gases before the exhaust gases enter a steam generating unit.

Federally Enforceable Specific Condition - A federally enforceable specific condition written to limit the potential to Emit (PTE) of a source that is permanent, quantifiable, and practically enforceable. In order to meet these requirements, the draft permit containing the federally enforceable specific condition must be placed on public notice and include the following conditions:

- A clear statement of the operational limitation or condition which limits the source's potential to emit;

- Recordkeeping requirements related to the operational limitation or condition;
- A requirement that these records be made available for inspection by LDEQ personnel;
- A requirement to report for the previous calendar year.

Grandfathered Status- Those facilities that were under actual construction or operation as of June 19, 1969, the signature date of the original Clean Air Act. These facilities are not required to obtain a permit. Facilities that are subject to Part 70 (Title V) requirements lose grandfathered status and must apply for a permit.

Heat Recovery Steam Generator (HRSG) – A steam generator that recovers exhaust heat from a gas turbine, and provides economizing and steam generation surfaces.

Hydrogen Sulfide (H_2S) - A colorless inflammable gas having the characteristic odor of rotten eggs, and found in many mineral springs. It is produced by the action of acids on metallic sulfides, and is an important chemical reagent.

Maximum Achievable Control Technology (MACT) - The maximum degree of reduction in emissions of each air pollutant subject to LAC 33:III.Chapter 51 (including a prohibition on such emissions, where achievable) that the administrative authority, upon review of submitted MACT compliance plans and other relevant information and taking into consideration the cost of achieving such emission reduction, as well as any non-air-quality health and environmental impacts and energy requirements, determines is achievable through application of measures, processes, methods, systems, or techniques.

NESHAP - National Emission Standards for Hazardous Air Pollutants –Air emission standards for specific types of facilities, as outlined in 40 CFR Parts 61 through 63

Nitrogen Oxides (NO_x) - Compounds whose molecules consists of nitrogen and oxygen.

Nonattainment New Source Review (NNSR) - A New Source Review permitting program for major sources in geographic areas that do not meet the National Ambient Air Quality Standards (NAAQS) at 40 CFR Part 50. Nonattainment NSR is designed to ensure that emissions associated with new or modified sources will be regulated with the goal of improving ambient air quality.

NSPS - New Source Performance Standards – Air emission standards for specific types of facilities, as outlined in 40 CFR Part 60

Organic Compound - Any compound of carbon and another element. Examples: Methane (CH_4), Ethane (C_2H_6), Carbon Disulfide (CS_2)

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Part 70 Operating Permit- Also referred to as a Title V permit, required for major sources as defined in 40 CFR 70 and LAC 33:III.507. Major sources include, but are not limited to, sources which have the potential to emit: ≥ 10 tons per year of any toxic air pollutant; ≥ 25 tons of total toxic air pollutants; and ≥ 100 tons per year of regulated pollutants (unless regulated solely under 112(r) of the Clean Air Act) (25 tons per year for sources in non-attainment parishes).

PM_{10}- Particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers as measured by the method in Title 40, Code of Federal Regulations, Part 50, Appendix J.

Potential to Emit (PTE) - The maximum capacity of a stationary source to emit any air pollutant under its physical and operational design.

Prevention of Significant Deterioration (PSD) – A New Source Review permitting program for major sources in geographic areas that meet the National Ambient Air Quality Standards (NAAQS) at 40 CFR Part 50. PSD requirements are designed to ensure that the air quality in attainment areas will not degrade.

Selective Catlaytic Reduction (SCR) – A noncombustion control technology that destroys NO_X by injecting a reducing agent (e.g., ammonia) into the flue gas that, in the presence of a catalyst (e.g., vanadium, titanium, or zeolite), converts NO_X into molecular nitrogen and water.

Sulfur Dioxide (SO_2) – An oxide of sulfur.

TAP - Toxic Air Pollutant (LDEQ acronym for air pollutants regulated under LAC 33 Part III, Chapter 51, Tables 1 through 3).

Title V permit – See Part 70 Operating Permit.

"Top Down" approach – An approach which requires use of the most stringent control technology found to be technically feasible and appropriate based on environmental, energy, economic, and cost impacts.

Turbine – A rotary engine in which the kinetic energy of a moving fluid is converted into mechanical energy by causing a bladed rotor to rotate.

Volatile Organic Compound (VOC) - Any organic compound which participates in atmospheric photochemical reactions; that is, any organic compound other than those which the administrator of the U.S. Environmental Protection Agency designates as having negligible photochemical reactivity.